

REMARKS

Claims 1-7 and 9-10 are pending in the application. Claim 1 is amended to overcome the examiner's drawing rejection and to more succinctly claim what the applicants regard as their invention. Claims 2, 5-6 and 9-10 are amended above to overcome the examiner's objection to the language used to claim the invention and/or to correct typographical claim errors.

No new matter has been added to the application by way of these specification and claim amendments.

The examiner's specification and claim objections and rejections are overcome or they are traversed as set forth below.

I. THE DRAWING OBJECTION

The examiner objected to figures for not showing every feature of a claimed invention. This objection has been overcome by amending the claim 1 to remove the features alleged by the examiner not to be shown in the Figures. The cancelled features are not essential elements of the present invention.

Reference to the "linkages" has been replaced by "connecting members" throughout the claims. By way of explanation, the connecting members (denoted by numerals 6a, 6b, and 6c in the figures and in the specification description corresponding there-with) are attached generally at the rear of the mineplough blade for connecting the mineplough to a carrier vehicle.

II. THE 112 2nd PARAGRAPH REJECTION OF CLAIMS 1-10

The examiner rejected claims 1-10 under 35 U.S.C. 112, 2nd paragraph as being indefinite. The examiner's rejections have been overcome as follows below.

- The rejection of claim 1 is overcome, in part, by the "deleting the depth control means" feature from the claim.
- The examiner objected to the features found in claim 1, lines 6 – 7 for being unclear. The features at claim 1, lines 6-7 are clear based upon the following description of the claimed features.

The mineplough blade is comprised of the vertical plates (2a to 2j) and the horizontal plates (3a to 3d) constituting the mouldboard (having open channels there-through) and from which the tines 5b – 5j extend in a forward direction (See page 5, lines 10-22 of the specification). The mineplough blade is set at

an angle to the general direction of movement of the mineplough during use. (See Abstract & page 2, lines 3-18 of the specification).

The direction of movement of the mineplough during use is most easily understood with reference to Figure 3 which shows a plan view of the mineplough blade looking from the underside of the blade. With reference to figure 3 on page 3/3 of the drawings, the lower horizontally-disposed plate of the mineplough blade / mouldboard is denoted by numeral 3d. The general direction of movement of the mineplough during use would be in a direction parallel with a line running from the top to the bottom of page 3/3. In the figure, the front of the mineplough blade / mouldboard is arranged at angle of about 55° (125°) to the direction of movement thereof.

Accordingly, the mineplough blade travels in a direction substantially parallel with tines 2a to 2j (contrary to Examiner's statement in the first paragraph on page 3 of the Office Action). Such a configuration would be readily apparent to the skilled person and clearly understood by the skilled person.

Based upon this explanation it is clear that lines 6-7 of claim 1 describes intersecting plates that have planes which lie substantially parallel to the direction of travel of the mineplough blade element.

- The examiner's rejection of claim 2 is overcome by replacing the word "the" with the word "a" where it appears before the word "vertical plane".
- The examiner's rejection of claim 5 is overcome by cancelling the term "relatively weak" from the claim and replacing it with a more concise feature. Claim 6 has been amended accordingly.
- The examiner's rejection of claim 8 is moot as claim 8 is cancelled from the application in this Reply without prejudice.
- The examiner's rejection of claim 9 is overcome by cancelling the term "each linkage" from the claim.
- The examiner's rejections of claim 10 is overcome by more concisely describing the outer and inner U-shaped channel pieces as first and second U-shaped channel pieces.

III. THE OBVIOUSNESS REJECTIONS

The examiner rejected claims 1-4 and 7-8 for being obvious over Evans USP 3,561,539 in view of Schubach USP 3,869,012 or in view of Hollingsworth USP 5,082,307. The examiner further rejected claims 5-6 for being obviousness over Evans in view of Schubach or Hollingsworth and in further view of Livermore USP 3,085,635. The examiner's obviousness rejections are traversed as set forth below.

A. Traverse Of The Obviousness Rejection Of Claims 1-4 And 7-8

As an initial matter, the examiner has not established a *prima facie* case of obviousness because the examiner has not identified a prior art reference that discloses beneficial features of the present claimed invention. Namely, the examiner has not identified a prior art reference that discloses the claimed open channels in the mineplough blade element defined by the intersecting plates, which channels provide ploughing action to be maintained and enable blast products to be vented through the blade thereby lowering the loading on the connecting members. (See claim 1). For this reason alone, claims 1-8 are non-obvious and patentable over the prior art.

Further, none of the references the examiner relies upon to reject claims 1-8 for obviousness disclose a mineplough. Nonetheless, the examiner asserts that Evans discloses a mineplough comprising many of the claimed elements. Contrary to examiner's assertion Evans does not disclose a mineplough. Instead, Evans discloses a ripper plough used to "...break up exceptionally hard ground, rocky soil, old road beds and the likes for construction thereon" (Evans, column 1, lines 5 – 7 refers). There is absolutely no teaching in Evans to using the plough described therein for effecting clearance of a path through a minefield as in the present invention, nor any teaching that said plough could be used for such an application.

Indeed, the ripper plough as described in Evans cannot be used as a mineplough because it is towed behind draft means 10 such as a tread-type tractor (see Evans, column 1, lines 68 – 70). Evans, column 1, lines 70 – 72 specifically teach that the clevis-type hitches 11 and 12 are fixedly attached to the rear of the tractor. Accordingly, if used as a mine plough, the draft means 10 would cause any mines in its path to detonate before being engaged by the ripper plough. Moreover, the ripper plough as described in Evans cannot be used ahead of the draft means because it would be impossible to steer the plough (the plough would have a tendency to veer to one side because of the clevis-type hitches 11 and 12). In addition, the tines are incorrectly oriented. Even if the ripper plough described in Evans were used ahead of the draft means, there is no teaching nor expectation that an effective mineplough would result.

The differences in the intended use of the Evans's ripper plough in contrast to the claimed mineplough result in Evans's failure to disclose several features of the claimed invention. The claimed features not disclosed in Evans include a "blade angle not parallel to direction of movement" (feature (b) of the examiner's list of elements allegedly taught by Evans) and a "set of horizontal plates" (feature (i) of the examiner's list of elements allegedly

taught by Evans). Claims 1-4 and 7-8 are non-obvious and patentable because each of these claimed features are not found in Evans.

Referring to claim 1 element (b) a “blade angle not parallel to direction of movement”, the examiner asserts that Evans, col. 2, lines 44 – 52 teaches that the blade angle is not parallel to the direction of movement. However, Evans has no such teaching. In Evans, the blades 50 are fixed to intermediate members 40 pivotally attached to the beam 30 (E.g., Evans, Figures 1 and 2). Hence, the intermediate members (and blades attached thereto) are afforded a limited pivotal movement about pin 39. (Evans, column 2, lines 65 – 69). Hence, during use, blade 50 will be parallel to the direction of movement unless deflected by material in the ground.

With reference to claim 1 element (i), “a set of horizontal plates”, the examiner appears to have misinterpreted the elongate beam 30 of Evans as the set of horizontal plates as presently claimed. The elongate beam 30 of Evans is not a set of horizontal plates as the claims require.

The examiner relies on Schubach and Hollingsworth Jr. for disclosing the at least one crushable element of the claimed invention. The crushable element of the presently claimed invention must be a crushable element that is capable of absorbing “blast energy”. Neither Schubach nor Hollingsworth Jr. teaches a crushable element with such a capability. Schubach and Hollingsworth Jr. merely teach resilient bushings principally for absorbing vibration shocks during towing. Specifically, Schubach teaches a pair of “...tapered rubber bushings” 70 and 71 (Schubach, column 3, line 64), whereas Hollingsworth Jr. teaches “...rubber shock bushings” 10E and 10F (Hollingsworth Jr., column 3, line 45). The resilient bushings taught in Schubach and Hollingsworth Jr. are not suitable for absorbing blast energy from a mine as would be readily apparent to a skilled person working in the field of mine clearing technology.

Moreover, one of ordinary skill in the art of mineploughs, at the time of the present invention would not have considered Evans, Schubach or Hollingsworth Jr. since none of these documents refer or relate to mine clearing technology. And even if the person of ordinary skill were aware of these documents, there is no motivation to combine them with any expectation of achieving any technical effect, let alone the technical effect of the presently claimed mineplough. Indeed, Evans, Schubach and Hollingsworth Jr. all relate to different technical fields as indicated by the different U.S. classifications of the respective patents (Evans relates to a vibrating tool for earth-working under U.S. Class. 172; whereas

Schubach relates to a motor carrying attachment for a motor vehicle under U.S. Class. 180; and Hollingworth Jr. refers to a suspension system for a land vehicle under U.S. Class. 280).

Claims 1-4 and 7-8 are non-obvious and patentable over Evans in view of Schubach or Hollingworth Jr. for each of the reasons recited above.

B. Traverse Of The Obviousness Rejection Of Claims 5-6

Claims 5-6 are patentable by virtue of their dependency upon claim 1. Claim 1 – as presently amended and broadened – is believed to be non-obvious and patentable for the reasons recited in Section III (A) above.

Claims 5-6 are also independently patentable because Livermore does not teach a covering material for a mineplough capable of being disrupted by blast energy (See claim 5 as amended herein). Livermore merely teaches a ground rooting tooth assembly having supplementary guard elements denoted by numerals 12 and 13. Livermore suggests that the guard elements provide savings in terms of reduced maintenance costs (Livermore, column 5, lines 7 – 12). However, there is no teaching in Livermore as to any other technical or commercial benefit.

With reference to the present claimed invention, the covering material in the present mineplough is configured to be disrupted by blast energy from mines exploding adjacent the blade. In this manner, the covering material is able to absorb some of the blast effect of an exploding mine. In addition, the sacrificial nature of the covering material ensures that the full blast effect is not transmitted to the connecting members, the linkage or to the carrier vehicle.

Accordingly, the skilled person having knowledge of Evans, Schubach, and Hollingworth Jr. would not be motivated by the further teaching in Livermore to incorporate a protective cover to the ripper plough taught in Evans with any expectation of achieving the technical effect of the present mineplough. Indeed, even if the skilled person were to incorporate the protective cover of Livermore into the ripper plough taught in Evans the technical effect of the present invention would still not be achieved. It is for at least these reasons that claims 5-6 are non-obvious and patentable over the prior art recited by the examiner.

IV. THE ALLOWABLE SUBJECT MATTER

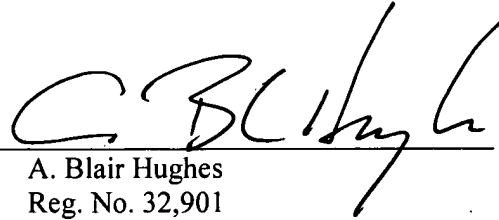
The applicants acknowledge that claims 9 and 10 would be allowable if rewritten in independent form. The applicants have amended claims 9-10 above and believe that the amendments do not affect the patentability of those claims.

CONCLUSION

Claims 1-7 and 9-10 are believed to be allowable for the reasons identified above. Favourable reconsideration and allowance of pending application claims is, therefore, courteously solicited.

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By

A handwritten signature in black ink, appearing to read 'A. Blair Hughes', written over a horizontal line.

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